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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,902	05/26/2006	Midorikawa Yukinori	12400-079	1277

757 7590 10/12/2011

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EXAMINER	
HAUGLAND, SCOTT J	
ART UNIT	PAPER NUMBER
3654	

MAIL DATE	DELIVERY MODE
10/12/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/580,902	YUKINORI ET AL.	
	Examiner	Art Unit	
	SCOTT HAUGLAND	3654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *7/15/11*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

4)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5)☒ Claim(s) *1-14 and 16-21* is/are pending in the application.

5a) Of the above claim(s) _____ is/are withdrawn from consideration.

6)☐ Claim(s) _____ is/are allowed.

7)☒ Claim(s) *1-14 and 16-21* is/are rejected.

8)☐ Claim(s) _____ is/are objected to.

9)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

10)☐ The specification is objected to by the Examiner.

11)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-4, 16, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al (U.S. Pat. Appl. Pub. No. 2002/0189880) in view of Yano et al (U.S. Pat. No. 6,499,554).

Tanaka et al discloses a retractor for a seat belt system for a vehicle comprising: a spindle 4 on which a webbing is wound, a frame 2 for pivotally holding the spindle, and a first torque generating system 14 including spiral spring 54 to rotate the spindle in a winding direction in which the webbing is wound and connected to the spindle at all times so as to transmit the generated torque to the spindle, a second torque generating system (motor 10) which generates torque to rotate the spindle in the winding direction, and a torque transmitting mechanism system 5 which transmits the torque generated by the second torque generating system to the spindle. The torque transmitting mechanism system 5 does not transmit torque generated by the second torque generating system to the spindle when the second torque generating system generates torque for rotating the spindle in the seatbelt unwinding direction (abstract, par. 68).

The second torque generating system generates a torque in the unwinding direction after winding the belt to put the torque transmitting mechanism system into a state in which the second torque generating system does not transmit torque to the spindle to prevent interference with the normal operation of the spindle (Fig. 6). The first torque generating system (spring unit 14) produces a torque at a point in the process of winding the seatbelt onto the spindle that is so low that the first torque generating system is incapable of winding the seatbelt onto spindle 4 by itself (par. 40; dashed line in Fig. 6). The first torque generating system is capable of restricting a passenger seated in a seat (at least due to the force it generates in the buckled position or its connection to the retractor frame; note left end of graph in Fig. 6). The second torque generating system (motor 10) has a significantly higher torque generating capability to ensure that the seat belt is wound when necessary. A seat belt fastening state detecting system is incorporated into a buckle (e.g., claim 1, lines 4-6 of Tanaka et al).

Tanaka et al does not explicitly disclose that the control system controls the torque generated by the second torque generating system according to a dangerous state.

Yano et al teaches controlling the torque of a motor 10 (second torque generating system) for winding a seat belt according to a dangerous state of a vehicle (col. 27, lines 17-25).

Assuming, arguendo, that Tanaka et al does not disclose that the retractor includes the spindle locking system in the related patent to Yano et al, Yano et al teaches providing a seatbelt retractor of the type in Tanaka et al with a spindle locking

system means (6,8) for preventing the webbing from drawing that stops rotation of the spindle rotating in a webbing drawing out direction when a rotational acceleration of the spindle is greater than a first predetermined value when the webbing is accelerated in the drawing out direction and stops rotation of the spindle rotating in the drawing out direction when a deceleration of the vehicle is greater than a second predetermined value.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the retractor of Tanaka et al with a spindle locking system means for preventing the webbing from drawing that stops rotation of the spindle rotating in a webbing drawing out direction when a rotational acceleration of the spindle is greater than a first predetermined value when the webbing is accelerated in the drawing out direction and stops rotation of the spindle rotating in the drawing out direction when a deceleration of the vehicle is greater than a second predetermined value as taught by Yano et al to restrain a wearer of the seat belt during a vehicle emergency.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to make the control system of Tanaka et al control the torque of the motor (second torque generating system) according to a dangerous state of a vehicle as taught by Yano et al to safely secure a vehicle occupant without requiring additional components.

The retractor of Tanaka et al as modified appears to have a first torque generating system (spring) that generates a torque that is configured to be lower than

the torque generated by the second torque generating system when each are transmitted to the spindle as recited in claims 1 and 7 because the torque required for securing an occupant in an emergency would be significantly higher than the torque generated by a spring that is incapable of fully winding the seatbelt. Assuming, arguendo, that the torque of the first torque generating system is not lower than that generated by the second torque generating system, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make second torque generating system of the retractor of Tanaka et al as modified capable of generating a greater torque than the spring to allow for the case in which the spring is in or near a state of failure to ensure that the seat belt is wound when required and to be capable of restraining an occupant in an emergency.

With regard to claim 20, the rotary speed of the spindle would inherently increase with time as torque is applied by the drive motor 10.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of Yano et al as applied to claim 1 above, and further in view of Peter (U.S. Pat. No. 2003/0201359).

Tanaka et al does not disclose a torque transmission cushioning system for cushioning a torque transmission by an elastic member arranged between the second torque generating system and the spindle.

Peter teaches a torque transmission cushioning system for cushioning a torque transmission by an elastic member 28 arranged between a torque generating system 36 and a belt spindle 12.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the retractor of Tanaka et al with a torque transmission cushioning system for cushioning a torque transmission by an elastic member arranged between the second torque generating system and the belt spindle as taught by Peter to simplify the spindle acceleration responsive locking mechanism.

With regard to claim 6, it would have been obvious to make an elastic force of the elastic member in the power transmission cushioning system when substantially compressed larger than the force generated at the same point by the first torque generating system to prevent false triggering of the associated locking mechanism.

Claims 7-13, 18, 19, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of Yano et al and Fujii et al (U.S. Pat. No. 6,427,935).

Tanaka et al is described above.

Assuming, arguendo, that Tanaka et al does not disclose that the retractor includes the spindle locking system in the related patent to Yano et al, Yano et al teaches providing a seatbelt retractor of the type in Tanaka et al with a spindle locking system means (6,8) for preventing the webbing from drawing that stops rotation of the spindle rotating in a webbing drawing out direction when a rotational acceleration of the

spindle is greater than a first predetermined value when the webbing is accelerated in the drawing out direction and stops rotation of the spindle rotating in the drawing out direction when a deceleration of the vehicle is greater than a second predetermined value.

Tanaka et al does not disclose a webbing action detecting system for detecting whether the webbing is drawn out, the webbing is wound, or the webbing is in a stopping state or a control system for controlling the torque of the second torque generating system according to an action of the webbing detected by the webbing action detecting system.

Fujii et al teaches providing a seat belt retractor with a webbing action detecting system (40, 50) for detecting whether the webbing is drawn out, the webbing is wound, or the webbing is in a stopping state. Rotation detecting unit 50 of the webbing action detecting system detects rotary speed and direction of the spindle by detecting variation in rotary position of the spindle (which is a speed). The speed is used at least to the extent that a finite or zero speed is detected (to detect stoppage). A control system (Fig. 16) for controlling the torque of the second torque generating system according to an action of the webbing detected by the webbing action detecting system.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the retractor of Tanaka et al with a spindle locking system means for preventing the webbing from drawing that stops rotation of the spindle rotating in a webbing drawing out direction when a rotational acceleration of the spindle is greater than a first predetermined value when the webbing is accelerated in

the drawing out direction and stops rotation of the spindle rotating in the drawing out direction when a deceleration of the vehicle is greater than a second predetermined value as taught by Yano et al to restrain a wearer of the seat belt during a vehicle emergency.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the retractor of Tanaka et al with a webbing action detecting system for detecting whether the webbing is drawn out, the webbing is wound, or the webbing is in a stopping state by detecting a rotary speed and a rotary direction of the spindle and with a control system for controlling the torque of the second torque generating system according to an action of the webbing detected by the webbing action detecting system as taught by Fujii et al to provide improved control of the retractor that supports different operating modes.

Claim 14 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of Yano et al and Fujii et al as applied to claims 7 and 13 above, and further in view of Midorikawa et al (U.S. Pat. No. 6,485,057).

Tanaka et al does not disclose making the second torque generating system gradually reduce the torque with lapse of time during winding as recited in claim 14. Tanaka et al does not disclose a webbing action detecting system that detects the webbing action by detecting a rotary speed and a rotary direction of the spindle as recited in claim 21.

Midorikawa et al teaches gradually reducing the torque of a seatbelt winding mechanism during winding (col. 51, lines 16-29) and teaches detecting system webbing action by detecting a rotary speed and a rotary direction of the spindle (abstract; S6903, Fig. 63; col. 67, lines 38-46; Figs. 72, 73; col. 81, lines 48-64; col. 82, lines 60-67).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to retract the seatbelt in Tanaka et al with gradually decreasing torque and to provide the retractor of Tanaka et al with a webbing action detecting system that detects the webbing action by detecting a rotary speed and a rotary direction of the spindle as taught by Midorikawa et al to prevent discomfort to the wearer during belt tightening and to make it possible to precisely control operation of the retractor.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Tanaka et al in view of Yano et al as applied to claim 1 above, and further in view of Midorikawa et al (U.S. Pat. No. 6,485,057).

Tanaka et al does not disclose making the second torque generating system gradually reduce the torque with lapse of time during winding.

Midorikawa et al teaches gradually reducing the torque of a seatbelt winding mechanism during winding (col. 51, lines 16-29).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to retract seatbelt in Tanaka et al with gradually decreasing torque as taught by Midorikawa et al to prevent discomfort to the wearer during belt tightening.

Response to Arguments

Applicants' arguments filed 7/15/11 have been fully considered but they are not persuasive.

Applicants argue that the prior art does not disclose different torque settings (p. 14). However, it is noted that the term "setting" is not in the claims and erroneously suggests constant or unvarying torques. Neither of the torque generating devices disclosed by applicants would produce a constant torque at all times. The motor torque would vary widely, i.e., from zero (e.g., when off) or a negative value (if accounting for direction) to some positive value that depends on the capabilities of the motor and the applied electrical power. The torques in applicants' disclosure and claims refer to torques that can be generated at times by the torque generating devices. The torque generating devices (spring and motor) in Tanaka et al are inherently or implicitly capable of generating different torques since neither would produce the same torque at all times.

Applicants argue that the prior art does not disclose first and second torque generating devices operating at the same time (p. 15 of the remarks). However, at least Tanaka et al discloses this. The spring and motor operate at the same time. The spring is always connected to the spindle (belt reel).

Applicants argue 1) that the spring in Tanaka et al is not configured to generate a lower torque than the electric motor, 2) that the spring may weaken over time, but that is not part of the configuration, and 3) that Tanaka et al is silent as to the torque generated

by the spring as configured compared to the electric motor (p. 15 of the remarks). However, arguments 1 and 3 appear to be inconsistent and there is no disclosure in Tanaka et al that the spring is not configured to generate a lower torque than the electric motor. A motor that can produce a greater torque on the spindle than the spring is completely consistent with the disclosure of Tanaka et al (and, as discussed below, would be the most reasonable choice in the Tanaka et al device and would be a necessity in the device of Tanaka et al as modified by Yano et al). Regarding argument 2, a weakened spring is disclosed in Tanaka et al. It is part of the disclosed device. Regarding argument 3, Tanaka et al requires at least that the motor and the spring together be capable of fully winding the spring. Only if the torque produced by the spring were greater than half of the torque required to wind the spring would the torque required of the motor be less than that of the spring (and the torque of the spring would be greater than that required of the motor). However, it appears implicit in Tanaka et al that the torque producing capability of the motor is not limited to the required level under this particular situation because there is nothing in Tanaka et al to suggest that the spring would be limited to weakening only to this point and a motor with such limited capacity would be at risk of being unable to wind the belt at all times (the winding load varies in the real world) and of being overloaded. Even if not implicit in Tanaka et al, the use of a motor capable of producing a greater torque than the winding spring would have been obvious to ensure that the belt would be wound under all circumstances including a spring failure and to provide the significantly higher torque required to

produce rapid and positive occupant restraint in the event of an emergency in accordance with the use of the motor taught by Yano et al.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT HAUGLAND whose telephone number is (571)272-6945. The examiner can normally be reached on Mon. - Fri., 10:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Mansen can be reached on (571) 272-6608. The fax phone

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael R Mansen/
Supervisory Patent Examiner, Art Unit 3654

/SJH/